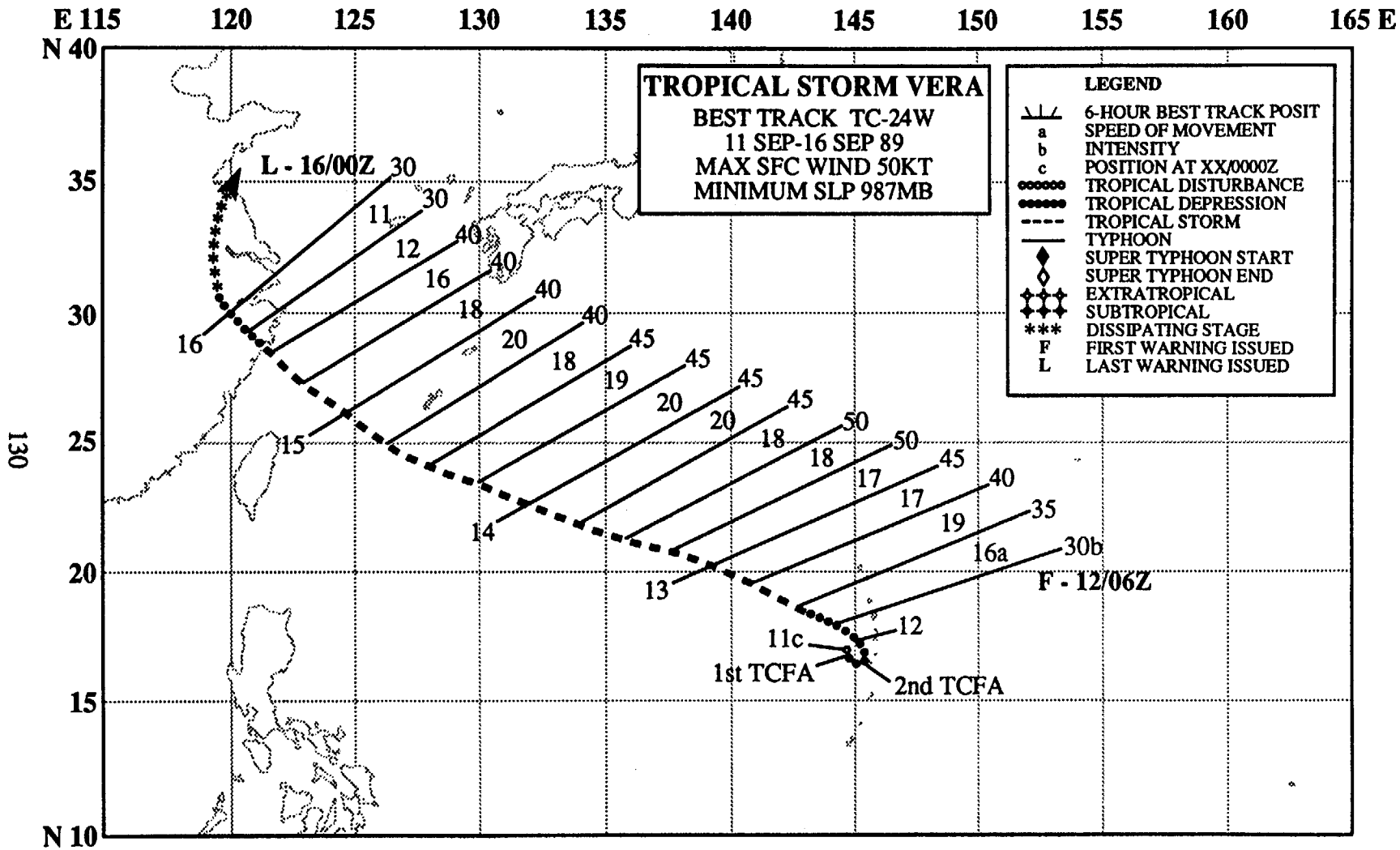
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TROPICAL STORM VERA
BEST TRACK TC-24W
11 SEP-16 SEP 89
MAX SFC WIND 50KT
MINIMUM SLP 987MB
LEGEND
6-HOUR BEST TRACK POSIT
a SPEED OF MOVEMENT
b INTENSITY
c POSITION AT XX/0000Z
TROPICAL DISTURBANCE
TROPICAL DEPRESSION
TROPICAL STORM
TYPHOON
SUPER TYPHOON START
SUPER TYPHOON END
EXTRATROPICAL
SUBTROPICAL
*** DISSIPATING STAGE
F FIRST WARNING ISSUED
L LAST WARNING ISSUED
L - 16/00Z
F - 12/06Z
1st TCFA
2nd TCFA
16
15
14
13
12
11c
16a
30b
35
40
45
50

# TROPICAL STORM VERA (24W)

The third tropical cyclone in September, Vera generated north of Guam. After some initial erratic motion, the cyclone moved on a west-northwestward track, threatened Okinawa, and made a devastating landfall just south of Shanghai.

Vera generated in an area of low-level convergent flow in the monsoon trough approximately 250 nm (465 km) north of Guam. Persistent convection had not been observed with this system prior to 101200Z. By then, however, the combination of persistent convection, a preexisting low-level circulation center, and sea-level pressures below 1004 mb triggered JTWC to issue the first Tropical Cyclone Formation Alert at 110430Z. Both satellite imagery and synoptic data indicated efficient outflow over the low-level circulation center suggesting good potential for further development. JTWC reissued the Alert at 111500Z as the disturbance moved to the southeast, and out of the original Alert box.

After the initial erratic motion, the convection organized around the circulation center, and the cyclone settled into a track to the west-northwest. JTWC issued the first warning on Tropical Depression 24W at 120600Z. Moving into increased steering flow along the southern side of the subtropical ridge, the tropical cyclone increased its translational speed and continued to intensify. At 121200Z, JTWC upgraded the depression to Tropical Storm Vera.

Due to two impinging TUTT cells, which constricted the efficiency of its upper-level outflow, one to the northwest and one to the northeast, Vera (Figure 3-24-1) intensified

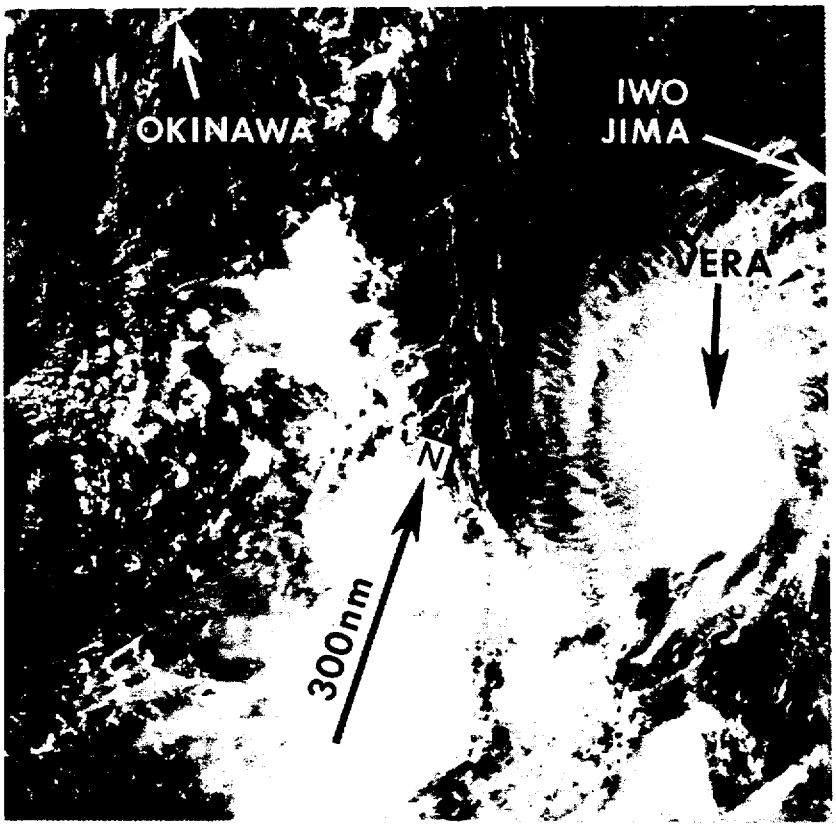


Figure 3-24-1. Convection flares shortly before Vera reaches it peak intensity (130042Z September DMSP visual imagery).

slowly, reaching only a peak intensity of 50 kt (26 m/sec) at 130600Z. On 14 and 15 September, as the tropical cyclone accelerated to a forward speed of 20 kt (10 m/sec), it started to weakened due to strong vertical wind shear. Vera passed 100 nm (185 km) southwest of Okinawa and maintained tropical storm intensity until after it made landfall approximately 150 nm (240 km) south of Shanghai. At 151800Z, the cyclone was downgraded to a tropical depression. JTWC issued the final warning at 160000Z, and the system dissipated over land 18 hours later. No damage reports were noted from Okinawa, however, press releases from China cited Vera as the most powerful cyclone to hit the low-lying Zhejiang province in southeastern China in decades. Estimates ran as high as 500 fatalities, 700 injured and hundreds missing. Heavy rains reportedly caused extensive flooding and crop damage.